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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,866	06/25/2003	Shune-Long Wu	MR3029-76	2120
4586	7590	09/27/2004	EXAMINER	
ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043			WU, SHEAN CHIU	
			ART UNIT	PAPER NUMBER

1756

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/602,866

Applicant(s)

WU ET AL.

Examiner

Shean C. Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. It is noted that newly added claim 15 does not specify the liquid crystal material and the mixture phase thereof. Applicants didn't provide the support in the present specification to broaden their claims.

3. Claims 15-17, 20-21, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (Liquid Crystals, 2002, Vol. 29, No.1, 39-45).

The reference discloses an achiral swallow-tailed material, 2-propylpentyl 4-(4'-decyloxybiphenyl-4-carbonyl) benzoate (formula P) mixed with an antiferroelectric liquid crystal (S)-4-(1-methylheptyloxy) carbonylphenyl-4'octyloxy-4 biphenylcarboxylate (S-MHPOBC, m). See section 2.2. The electrooptical response of this mixture in the ferroelectric phase displays V-shaped switching, while that in the antiferroelectric phase displays a double hysteresis switching. See abstract, table and Figs 3 and 5-7. The reference anticipates the claimed invention.

4. Claims 12-19, 22 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Wu et al. (Liquid Crystals, 2003, Vol. 30, No.2, 205-210).

The reference discloses that a ferroelectric liquid crystal 1-ethylpropyl (S)-2-(2-fluoro-4- (4'-decyloxybiphenylcarbonyloxy) benzoyloxy) propanoate was synthesized

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and mixed with an achiral swallow-tailed material 2-propylpentyl 4-(4'-nonyloxybiphenyl-4-carbonyl) benzoate (formula P), see section 2-2.1. The binary ferroelectric liquid crystal mixture displays V-shaped switching in ferroelectric phase. See abstract, table 1 (100P/0F) and Fig. 2. The reference anticipates the claimed invention.

### *Response to Arguments*

5. Applicant's arguments filed 7/14/04 have been fully considered but they are not persuasive. Applicants argue that Wu et al disclosed the chiral swallow-tailed liquid crystal has an antiferroelectric chiral smectic C phase. Applicant's attention is directed to the title and abstract of the reference. The reference (Liquid Crystals, 2003) teaches V-shaped switching in binary mixture of a ferroelectric liquid crystal and an achiral swallow-tailed. (col. 1, 2<sup>nd</sup> paragraph). The reference (Liquid Crystals, 2002) teaches V-shaped switching in binary mixture of an antiferroelectric liquid crystal and an achiral swallow-tailed. (abstract). Also, the new claim 15 does not specify the phase, which both references read on the claims. Therefore, the rejections under Wu et al (Liquid Crystals, 2002 and 2003) are still maintained.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

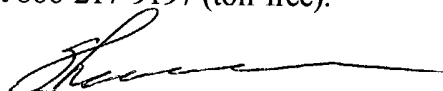
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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C. Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Shean C Wu  
Primary Examiner  
Art Unit 1756

scw